
कम-दबाव वाले वाष्प कूकर — विशिष्टि

Low-Pressure Steam Cooker —
Specification

ICS 98.540.50

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भारतीय मानक ब्यूरो
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FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Utensils, Cutlery Domestic Hardware Sectional Committee had been approved by the Mechanical Engineering Divisional Council.

The low pressure steam cooker is generally used for cooking rice, idli, dhokla, momo etc, using steam.

While drafting this standard, considerable assistance has been drawn from IS 2347 : 2017 'Domestic pressure cooker — Specifications (*sixth revision*)'. For the purpose of simplicity and uniformity in this standard, 'low pressure steam cooker' has been used as cooker, where ever required.

Electric type steam cookers are covered in IS 11879 : 1986 'Electric steam cookers'.

Provision of braille has been provided for instruction manual for the product(s) as per this standard.

The relevant SI units and corresponding conversion factors are given below for guidance:

$$\text{Pressure } 1\text{Pa (Pascal)} = 1 \text{ N/m}^2$$

$$1 \text{ kgf/mm}^2 = 9.806 65 \text{ MPa}$$

The composition of the committee responsible for the formulation of this standard is given in Annex A.

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$$1 \text{ kgf/mm}^2 = 9.806 65 \text{ MPa}$$

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LOW PRESSURE STEAM COOKER — SPECIFICATION

1 SCOPE

This standard covers the requirement for low pressure steam cookers with external heat source whose nominal working pressure is upto 0.1 Kg/cm².

NOTE — This cooker does not need to comply with the requirements of IS 2347, if the normal operating pressure is upto 0.1 kgf/cm².

2 REFERENCES

The standard listed below contain provision which, through reference in this text, constitute provision of this standard. At the time of publication, edition was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate possibility of applying the most recent edition of the standard indicated below:

IS No.	Title
21 : 1992	Wrought aluminium and aluminium alloys for manufacture of utensils — Specification (<i>fourth revision</i>)
2347 : 2017	Domestic pressure cooker — Specification (<i>sixth revision</i>)
5522 : 2014	Stainless steel sheets and strips for utensils — Specification (<i>third revision</i>)
6527 : 1995	Stainless steel wire rod — Specification (<i>first revision</i>)
6603 : 2001	Stainless steel bars and flats — Specification (<i>first revision</i>)
9730 : 2008	Non-stick unreinforced plastics coatings on domestic cooking utensils — Specification (<i>first revision</i>)
9806 : 2001	Methods of test for and permissible limits of toxic materials released from ceramicware, vitreous enamelware, glassware and glass — Ceramicware in contact with food (<i>first revision</i>)
9845 : 1998	Determination of overall migration of constituents of plastics materials and articles intended to come in contact with foodstuffs — Method of analysis (<i>second revision</i>)
15997 : 2012	Low nickel austenitic stainless steel sheet and strip for utensils and kitchen appliances — Specification

3 TERMINOLOGY

3.1 Low Pressure Steam Cooker — A domestic cooking utensil for use with external heat source and capable of maintaining nominal cooking steam pressure less than 0.1 kgf/cm² gauge nominal.

3.2 Rice Cooker — A domestic rice cooking utensil for use with external heat source and capable of maintaining nominal cooking steam pressure upto 0.1 kgf/cm² gauge nominal.

3.3 Steam Cooker — Appliance in which food is heated by steam generated at atmospheric pressure.

3.4 Stopper — Cover for the utensil which is an integral part of the low pressure cooker.

3.5 Auxiliary Closure — Cover which is an accessory, for its usage during cooking or serving.

3.6 Container/Inserts/Separator — Vessel/plate/accessories which is placed inside the cooker for cooking foods separately.

3.7 Grid — Used inside cooker to ensure that there is a gap between the separator and the cooker inside base so that the food does not burn. This may be also used for cooking food in steam without getting into direct contact with water or base of the cooker. It may be used when separators are used. This may also be used for steam of food.

4 CAPACITIES

4.1 The nominal capacity of cooker shall be from 1 to 10 litre and shall be expressed only in complete or half litre units. No negative tolerances shall be allowed on the nominal capacity.

4.2 The capacity of the cooker shall be tested as given in 8.3.

NOTE — If the capacity of a cooker is not in complete or half litre unit, its nominal capacity shall be marked as the nearest lower complete or half litre units. For example, in the case of a cooker having a capacity of 4.9 litre, the nominal capacity to be marked shall be 4.5 litre.

5 MATERIALS

5.1 Material which come in contact with food shall conform to designation 19000, 19500, 31000 or 40800 of IS 21 or stainless-steel conforming to designation 304 of IS 5522 or N 2 of IS 15997. The body of the

cooker if made of 3 ply construction material, it shall satisfy the requirements as prescribed in IS 2347.

5.2 Outer protective case and accessories of the cooker shall be of materials which shall be rigid enough to hold the inner container securely under conditions of use, corrosion resistant and protect it from damage in normal handling.

5.3 If the cooker is provided with tempered glass lid, the lid shall conform to the performance requirements as given in **8.10**. The minimum thickness of glass shall be 3.5 mm. If the stainless steel rim is provided on the glass lid, the material of rim shall be as per IS 5522 or IS 15997. The minimum thickness of the rim shall be 0.25 mm.

5.4 Rubber, if provided and comes in contact with food shall be made of food grade silicone (manufacturers certificate is acceptable).

5.5 In case plastic comes in contact with food, the plastic should be food grade and shall not contain Bisphenol A (BPA).

NOTE — Accessories and extra inner container may not be supplied along with the cooker unless specifically ordered or indicated on the packaging/user manual.

5.6 Inserts/accessories if provided in the cooker, shall be of material as given in **5.1**. In case stand is provided, the material shall be made of stainless steel of designation X02Cr18Ni11/X04Cr18Ni10/X07Cr18Ni9/X10Cr17Mn6Ni4 as per IS 6527 or stainless steel of designation X02Cr19Ni10/X10Cr17Mn6Ni4N as per IS 6603. In case material used is aluminium, anodized aluminium it shall comply to the applicable requirements as per IS 2347.

NOTE — Only chemical composition of stainless steel and aluminium needs to be complied with.

6 CONSTRUCTION

The construction of the cooker shall be suitable to ensure an easy and safe handling, good performance and a reasonable life. The vessel shall be so constructed that no distortion takes place under normal conditions of use.

7 WORKMANSHIP AND FINISH

7.1 The inner body and the lid of the cooker shall be free from wrinkles, scratches and other surface defects. The inner body and the lid shall be neat and clean.

7.2 The external cooker body should be free from defects.

7.3 The cooker, if hard anodized, fully or partially, shall satisfy the requirements as given in IS 2347.

8 REQUIREMENTS AND TESTS

8.1 Cooking Tests

8.1.1 Cook rice three times using the full capacity as stated by the manufacturer. There should be no spillage/droplets outside the cooker. The spillage can be inside an integrated cup, by design, if provided by the manufacturer. The rice cooked should not have any uncooked portion.

8.1.2 Steam vegetables (greens) three times using the full capacity as stated by the manufacturer, there should be no spillage (no droplets outside the cooker, it can be inside an integrated cup, by design, if provided by the manufacturer). The vegetables steamed should not have any uncooked portion.

8.2 Leakage Test

The cooker to be filled with 60° hot water upto its brim upright for 30 min. There should be no leakage.

8.3 Capacity Test

8.3.1 The nominal capacities may be as declared. The tolerance on the nominal capacity shall be +5 percent. No negative tolerance is permitted on nominal capacity of the cooker.

8.3.2 Volume of water at room temperature required to fill the container, when in an upright position, to the brim of the vessel/body.

8.3.3 Ensure the cooker body is empty, take water in a calibrated jar, pour the water from the calibrated jar into the cooker body, to the brim of the cooker body, the difference in reading of water level in the calibrated jar is the capacity.

8.4 The cooker, if coated with powder coating or ceramic coating or high temperature resistant liquid coating fully or partially externally, shall conform to the thickness test, salt water corrosion test, adhesion test as per IS 9730. The coating shall comply with IS 9806. The minimum thickness of the coating shall be declared by the manufacturer. The externally coated cooker shall be subjected to thermal shock test as given at **8.4.1**.

8.4.1 Dry heat the cooker body on gas stove to 220 +5/0°C and then quench in water at ambient temperature. Repeat the test 25 times. There shall be no blistering of coating from the cooker during or on completion of 25 gas heat cycles.

NOTE — Temperature to be measured inside bottom of the cooker body.

8.5 Stability of Cooker

When the cooker filled with water to the full capacity is placed upright over a rough 10° inclined plane, it should not overturn or fall.

8.6 Stopper

The stopper of the inner container shall be of non-toxic and food grade material (*see* IS 9845). If stainless steel or aluminum is used, it shall conform to the material specified for the inner container (*see* 5.1). If O-ring or Gasket is provided it should be food grade silicone. The materials shall not contain Bisphenol A (BPA).

8.7 Auxiliary Closure

The auxiliary closure(s), if provided shall be non-toxic, food grade material and shall not deform under normal conditions of use (*see* IS 9845). The materials shall not contain BPA.

8.8 Induction Bottom Cooker

If the cooker is provided with induction bottom, it shall pass the requirements as given in IS 2347.

8.9 Test(s) on Tempered Glass Lid

8.9.1 Fragmentation Test

8.9.1.1 One lid from each lot having the same thickness is to be tested for this purpose. The sample lid shall be supported on a level surface (vitrified tile or smooth concrete surface). Paste a 50 mm × 50 mm transparent tape inside the glass lid, where the glass would be impacted. The glass lid shall be broken by means of a center punch having radius of curvature 0.20 mm ± 0.05 mm at its tip by giving one severe blow to cause fracture. The point can be center point between the outer edge and the center (away from a hole, if provided).

8.9.1.2 The particle count determination shall be completed within 3 minutes of the fracture of that glass. No magnifying lens or other aid to vision need be used when making the particle count. The broken particle in a square of side 50 mm shall be counted. There shall be not less than 60 particles in a square of side 50 mm (50 mm × 50 mm). Biggest grain size shall not be more than 4.2 mm.

8.9.2 Ball Drop Test

8.9.2.1 One lid from each lot having the same thickness is to be tested for this purpose. The specimen shall be supported on a level surface (vitrified tile or smooth concrete surface). Mark three points 120° apart, the point can be center point between the outer edge and the center, (away from a hole, if provided).

8.9.2.2 The smooth surface steel ball of 227 grams is placed at a height of 1 000 mm from the surface (can be inside a plastic tube with a sliding stopper). Allow the

ball to free fall on the three points. No crack shall be seen by the naked eye under normal light.

8.9.3 Thermal Shock Test

8.9.3.1 This test is applicable for glass lids used for cooker, for others this test is optional.

8.9.3.2 One lid from each lot having the same thickness is to be tested for this purpose. Place the glass in an air circulating oven at 120 ± 5°C. Soak for the cited temperature for 30 min. Remove the glass, pour one liter of water at ambient temperature on the lid. The lid shall not shatter.

8.9.4 Free Fall Test

8.9.4.1 Drop the lid with rim facing down, from a height of 900 mm on a vitrified tile surface or a level smooth concrete surface. The glass shall not break/crack.

8.9.4.2 Drop the lid without rim facing down, from a height of 900 mm on a vitrified tile surface or a level concrete surface. The glass shall not break/crack.

9 SAMPLING

For the purpose of conducting the tests, 3 samples of each individual size shall be tested. In the event of one of the 3 samples failing the test, additional 7 samples shall be tested and these shall all pass.

10 INSTRUCTIONS FOR USE

10.1 The manufacturer shall supply fully illustrated instructions for use with each cooker. The instructions shall also indicate the cooking capacity of the cooker and shall include instructions or illustrations to identify features intended to reduce risks. The instruction for use may be provided in Braille.

10.2 The instruction manual shall include the important safeguards specified in 10.3, 10.4 and 10.5.

10.3 Unless otherwise indicated, the text of the instructions maybe be verbatim to, or in equally definitive terminology as specified in 10.5, except where specific conflict in the risk alluded to has been reduced. The items may be numbered. In a list of items, the phrases 'Read all Instructions', 'SAVE THESE INSTRUCTIONS' shall be first and last, respectively. Other important and safeguard items considered appropriate by the manufacturer may be inserted.

10.4 The instruction manual shall include the following as a basic requirement:

- a) Instruction for use (for example, how to open and close, how to use the menus);
- b) Important safeguards;
- c) Safety instruction;

- d) Do's and don'ts;
- e) Care and cleaning;
- f) At least two recipes using each function, unless it's only a keep warm function or child lock;
- g) Trouble shooting;
- h) A drawing or picture of the cooker with parts identified;
- j) List of spares;
- k) Service centers; and
- m) Customer care number and email id, web site details, with instruction on how to log in a complaint or service request.

10.5 Important Safeguards

10.5.1 Caution be sure to observe the following to prevent malfunction that may cause an accident:

- a) Measure the quantity of rice and water according to the instructions;
- b) Clean the cooker, particularly the condensation collector, after each use;
- c) Set the unit on a stable surface;
- d) Do not expose to water, high humidity, or heat sources;
- e) Do not use the pot directly on an open flame;
- f) Be sure to keep the unit out of the reach of children;
- g) Keep holes that drain into the condensation collector clean and free of debris;
- h) The unit becomes hot when in use. Do not touch the lid with your hand, and do not place your face or hand directly over the steam coming from the cooker;
- j) Always keep the outside bottom of the pot and the heating plate clean and dry. Any foreign matter between them will cause the unit to malfunction;
- k) The pot must not be filled above the maximum cup marking;
- m) The lid must be closed tightly in the latched position at all times during cooking. That is, the unit must not be operated with the lid opened;
- n) Do not cover the lid with a cloth. The lid may deform or change color; and
- p) Do not move the unit while cooking.

10.5.1.1 Cleaning and care

- a) Do not immerse the cooker in water;
- b) Clean the body and outer lid with a damp cloth. Do not use dishwashing detergent;
- c) Wash the rice cooker pot, steaming basket, measuring cup, scoop and condensation collector in warm soapy water; and

- d) Remove the detachable inner lid by grasping on both sides and gently pulling down. Wash in warm soapy water and dry thoroughly.

10.5.1.2 Helpful hints

- a) Using the keep warm function for more than 5 hours may cause discoloration or an odor in the rice;
- b) You can adjust the amount of water and/or rice to your own taste preferences;
- c) When steaming vegetables please reference the steaming chart in this manual. The charts are merely a guide, you may wish to adjust the times according to your own taste preferences;
- d) Washing Rice when rice is milled some bran and residues adhere to the surface of the rice. You can remove these residues by first washing the rice with water before cooking. This will remove excess starch and amp; residues, which will provide you with much whiter, fluffier rice;
- e) Remember to always use the measuring cup provided to accurately measure the rice. Add the desired amount of rice to the rice cooker pot. Fill with cold water until all of the rice is submerged. Wash the rice by simply stirring the rice around in the water and rubbing between your hands. You will notice that the color of the water will become cloudy as the rice is cleaned. Without spilling the rice, tip the rice cooker pot to remove the cloudy water and repeat several times until the water remains clear;
- f) Cooking other types of rice such as long grain rice, wild rice, yellow rice, brown rice, basmati rice, etc. When cooking rice other than short grain white rice it will be necessary to increase the amount of water by 1.5 to 2 times more than the standard short grain white rice recipe. Adjust to suit your own personal taste;
- g) Foods that are overly sweet or oily can cause the rice cooker to switch to keep warm earlier than desired. If this happens, add some liquid like water, wine, stock, milk or juice;
- h) When baking in the rice cooker, it is usually necessary to push cook more than once. You will need to wait for about 10 min after the machine switches to keep warm to be able to press it back to cook. This is normal; and
- j) Do not double recipes in the rice cooker. The tightly closed lid will force excess liquid out of the steam vent if you do.

12 MARKING

12.1 Each cooker shall be marked with its nominal capacity, the name or recognized trade-mark of the

manufacturer on the body. The carton shall also be similarly marked. Grade of material used for the manufacture of body and lid shall be permanently marked on the body of the cooker (for example, Lid-SS 304 or Al 19000 or SS304/Al 19000/SS 430, Body-SS 304 or Al 19000 or SS304/Al 19000/SS 430).

NOTE — For aluminium cooker with induction bottom, the grade can be added as a sticker/leaflet.

12.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity

assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

13 PACKAGING

Each cooker shall be suitable packaged to avoid any damage during transit. The packaging shall be eco-friendly

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Utensils, Cutlery Domestic Hardware Sectional Committee, MED 33

<i>Organization</i>	<i>Representative(s)</i>
In Personal Capacity (<i>A-504, K.G Chandra Vista, OMR, Opposite to Satyabhama University, Sholinganallur, Chennai</i>)	SHRI G. SHANMUGANATHAN (Chairman)
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